

Amendments to the Specification:

~~0080~~  
Please replace paragraph [0090] with this amended paragraph: *09/11/2010*

~~0050~~  
[0090] At step 235, it is determined whether the last contour has been digitized.  
Steps 215 to 230 235 are repeated for each contour and for each organ volume (eg. OAR, ATR, PTV). Once the last contour has been digitized, organ and contour digitization subprocess 200 feeds into beam and beamlet setup subprocess 300 at step 305, as indicated by reference indicator 1 in FIGS. 2 and 3.

Please replace the **abstract** with this amended abstract:

The invention relates to improved methods and systems for computationally efficient optimization of radiation dose delivery. ~~The optimization that involves~~ determining an improved form of objective function to be used for mapping radiotherapy beams to a patient body volume having at least one target volume and at least one non-target volume. The objective function has a first term related to the at least one target volume and a second term related to the at least one non-target volume. ~~The optimization further involves determining a minimum of the objective function whereby beams mapped so as to pass through the at least one non-target volume(s) are limited such that~~ The second term is zero only if the weights of beamlets passing mapped so as to pass through the at least one non-target volume(s) are zero. ~~This limit~~ The second term helps to avoid the occurrence of negative beam weights, thereby facilitating computationally efficient optimization determination of the minimum of the objective function using matrix inversion. ~~Following the optimization, An optimal set of weights of beamlets is determined using the objective function. Radiotherapy is delivered based on the determined optimal set of weights minimum of the objective function.~~